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THE JOURNAL OF PHILOSOPHY

INDIVIDUAL FREEDOM WITH SOME SOCIOLOGICAL IMPLICATIONS OF DETERMINISM

THE century-old question of individual freedom and responsibility continues to arise inevitably in philosophical, psychological and sociological discussions. It seems as impossible to solve it in a manner satisfactory to all scientific inquirers as it was for Tantalus to satisfy his thirst with the elusive waters of Tartarus. To the mind unspoiled by the sophistications of philosophy, it seems foolish to ask whether a man can, under a given set of circumstances, do otherwise than he does do; or whether in the past he might have done differently from what he did do; or whether in the future any one would be able to do otherwise than he will do. The consciousness of freedom is so real and so universal that such a mind scornfully rejects any implication that it is an automaton and proceeds to demonstrate by concrete instances that at the given moment it can do either one of two or more alternatives. But the scientist, deeply impressed with the wide range of causation and the utter impossibility of doing any logical thinking, to say nothing of any scientific investigation in any realm from which the principles of cause and effect are absent, affirms that the consciousness of freedom is merely an accompaniment of the conscious volitions and not a proof that action is not determined.

To the social scientist the question has a special significance, for it leads at once to the similar question whether there is any social freedom and responsibility, whether a social group can, in fact, do other than it does at any time or place, past, present, or future. If it should appear that what happens in society is the inevitable result of all the antecedent and attendant circumstances and conditions, it would seem to be obvious that the course of history is only what, in view of all its circumstances, it must have been, and that the future course of events is inevitably pre-determined within the womb of the present. This seems to reduce history to a hard and fast mechanical mold and make it the scene of operation of mechanical laws as inexorable as those which obtain among the heavenly bodies. Such, indeed, was the conception of social life and evolution

held by Auguste Comte, Adolphe Quetelet, and others a century ago, who, in imitation of Laplace's *Mécanique céleste*, conceived of *la physique sociale*. Such a view seems to most persons to make the future inevitably pre-determined, and, therefore, to destroy the ever-recurring hope that man, by his own efforts, may at last rise above the grip of a hard fate into a millennial utopia of peace, love, and plenty.

The steady progress of science has eliminated from one sphere of phenomena after another practically the last trace of every type of theological or spiritistic explanation. Science is inherently mechanistic and materialistic, with the result that every sphere of phenomena, in so far as brought under scientific investigation and understanding, is reduced to causal relationships which are inherent in the body of the phenomena themselves. From the standpoint of science, whatever occurs is thus linked with an interminable chain of cause and effect which is both self-contained and complete. In other words, science finds no place for any extraneous, haphazard influence which may inject itself into the chain of cause and effect in such a manner as to produce results not implied in antecedent conditions. The logic of this position implies clearly that human action and social movements are themselves the determined and to that extent the necessary and inevitable results of the antecedent conditions which may be said in terms of scientific causation to produce them.

When this view is applied to matters of human conduct and relationship it almost certainly arouses either an attitude of scepticism or resentment. The thoroughly naïve mind is fully possessed by the concept of freedom of action and the theory of personal responsibility for conduct. To such the theory of determinism seems to deprive man of his dignity as a self-determining personality and rob him of what is believed to be his highest characteristics, namely, his sense of moral responsibility. Indeed, determinism seems to rob man of his most precious possession, his immortal soul, and to leave him a meaningless automaton, a sort of complex puppet responding in mechanical fashion to forces which wholly control his behavior. Even the scientific student of psychology is by no means clear as to the bearing of the theory of determinism upon the freedom of the individual and this sense of moral responsibility. It is not unusual to find indications in thoroughly respectable writings that the deterministic theory is interpreted to mean that the individual becomes a mere automatic mechanism manipulated by extraneous forces and factors of which he may or may not be conscious, but which he is in no way capable of controlling. If such a view is not

taken, the well-meaning scientist, wishing to preserve what he considers to be the useful mental and moral values of freedom and responsibility, falls back on mystical conceptions of free will and resorts to some such metaphysical entities as the *élan vital,* or the inherent and supervising entelechy, or a supposititious "vital principle" or "vital force." But obviously all such terms are only efforts to express in high-sounding and thoroughly respectable metaphysical idioms the ideas popularly connected with the word "soul," a term which has lost caste in scientific circles.

To the mind that follows the logic of science rigorously to its inevitable conclusions such devices seem little better than the resort to the witches' cauldron of an early age. Obviously in the twentieth century it is impossible to solve the difficulties by the easy theological devices of Calvinistic theology in which predestination was softened by the faith that at least some were chosen. Moreover, in view of the steady strides of science toward the gradual elimination of supernaturalism from one sphere of human inquiry after another, one seems warranted in assuming that more confidence can be placed in the conclusions reached by a thoroughgoing determinism than in any other solution. It is, therefore, of first-rate importance to make clear the implications and significance of such a view for an understanding of individual psychology and for social life and organization.

The primary reason for such faith in a thoroughgoing theory of determinism is that all the progress that has been made in human knowledge, and hence in conscious control of life conditions, has been made on that basis. As soon as one leaves a rigorously deterministic approach to his phenomena, he immediately enters those foggy and mystifying speculations which, however much they may delight the heart of the metaphysician, add not one jot or one tittle to individual knowledge, and leave man individually and socially as helpless and inept as he had been before. For this reason every resort to concepts of "creative evolution" or "vitalism" which imply that some explanation or understanding has been reached with respect to obscure phenomena by applying to them terms which indicate belief in some spiritistic factor must be looked upon partly as confessions of ignorance and partly as naïve self-deceptions. If, for example, one thinks that he has explained the derivation of the infinite variety and complexity of living forms from relatively few and simple forms by some mysterious process or factor called creative evolution, he only deceives himself. Our forefathers who attributed the results to the direct supervision of God had an explanation which for all practical purposes was quite as good. Similarly,

when the vitalist claims that the processes of life include something over and above those processes which can be studied and elucidated by the methods of science, he is merely falling back on mysticism as an explanation of ignorance. It should be clear even to the tyro in scientific method that all that can possibly be known regarding any phenomena must be made known through the methods of science which rest solely upon the assumption of causal relationships. If there be an additional factor, it must be a factor which operates according to no law, with no uniformity, no regularity, and no consistency, for otherwise its regularity, uniformity, and consistency of action make it an object of scientific scrutiny.

An interesting illustration of the importance of this principle is found in the activities of the psychical researchers. They set out to prove the existence of spirits, of disembodied ghosts, but are straightway confronted with the fact that man has no means whatever whereby he can detect the presence of pure spirit. Since spirits can not be apprehended by sight, smell, taste, hearing, feeling, or grasping, it becomes necessary to materialize them by slate writing, table tapping, bell ringing, or ectoplastic protrusions. Now the exposure of a long list of mediums has thus far failed to reveal any spirits, but has revealed that the various material manifestations of spirits are the results of simple and well-known physical and mechanical causes cleverly manipulated by knowing, if not consciously fraudulent, mediums. But if we may, for the sake of argument, assume that there are spirits, we should have to assume, not only that they must make themselves known in material ways, but in ways that are regular, uniform, and consistent. If their manifestations were wholly irregular and inconsistent, we could never know anything about them, except the bare fact that they existed. If their behavior were consistent, uniform, and regular from time to time under like circumstances, we should at length discover their nature. But in that case we should say that their behavior was subject to law and therefore determined, even though the determination spring from their own nature and the necessity of being true to their nature as spirits of a certain type. Some theologians, of course, recognize the validity of this argument, for they assume the nature of God to be made known by His works in the world. Now those who profess to find in nature manifestations of a soul, a supervising entelechy, or a vital principle, in so far as they think of it as producing effects which are regular and law-abiding, must admit it to be determined in its manifestations and therefore capable of systematic investigation. In so far as they think of it as chaotic, it is a factor which may be named but never known.

The bearing of these considerations on the question of individual freedom and social self-determination may be approached by setting forth the view of an avowed indeterminist. Professor McDougall makes a sharp and decisive contrast between processes which he considers mechanistic and processes which are purposive. He holds that the mechanistic confidence of the nineteenth century has been routed and mechanistic biology rendered " bankrupt " by the inability to explain " the problems of evolution, the origin of variations and mutations, the differentiation and specialization of instincts, the increasing rôle of intelligent adaptation, the predominance of mind in the later stages of the evolutionary process, the indications of purposive striving at even the lowest levels, the combination of marvelous persistency of type with indefinite plasticity which pervades the realm of life and which finds its only analogue in the steadfast purposive adaptive striving of a resolute personality " (*The Sci. Mo.,* XIX, Sept. 1924, 310; see also his *Outline of Psychology,* 1923, pp. 447–8). McDougall clearly believes that there is a distinct contrast between the physical and the mental, a contrast which he identifies with the difference between what is strictly determined and what is creative. For him it is impossible to conceive of inventions and the creative works of art and literature as results of a deterministic process of cause and effect.

It is difficult for one who has accepted the logic of science to follow Professor McDougall's reasoning here, for his view compels one to admit that all processes of nature are in the end miracles, and, therefore, really incapable of explanation. It is obvious that, if mechanistic biology is bankrupt in the presence of evolution, mutations, and variations, it is equally bankrupt in the presence of assimilation, growth, life, reproducton, and death. Indeed, so also is chemistry bankrupt before the simple fact that two molecules of hydrogen gas and one of oxygen produce water. This is obviously a phenomenon of "creative evolution" and may be *explained* as due either to the purposeful intent of some indwelling spiritistic entity or as due to the very nature of the gases themselves. The former " explanation " leads back to divinity as immanent and ever active; the latter leads back to primordial matter and energy the attributes of which constitute the ultimate " explanations " of all the phenomena of the observable world. But since both " explanations " are but metaphysical speculations, it seems best to recognize that all that science attempts is to describe the coëxistence and sequences of events; that such description constitutes the whole of scientific knowledge; and that such knowledge is the only sure means of controlling and improving man's status on the globe.

Professor McDougall's object in falling back on miracle and indeterminism is due to his erroneous assumption that this is the only way in which any reality can be given to human freedom and human purpose. But the superficiality of this view can be made clear by an analysis of the possible conceptions of free will. These are two. There is first the view of free will as an undetermined, unrelated, and uncaused factor in human action. From this point of view free will is a pure chance factor, operating in a manner which can not be foreseen, which can not be controlled, and which is, therefore, removed from possibility of complete analysis because of the complete irregularity and essentially spontaneous manner of its action. From this point of view the will must be conceived as a special entity separate from, and uncontrolled by, the general stream of cause and effect, but capable of exercising a final decisive influence upon a line of conduct. Such a will is obviously incapable of scientific analysis because it operates in an essentially chaotic fashion. Now a world of chaos is a world in which intelligence can play no rôle. Consequently nothing could be known of the actions of such a free will; it could not be brought under control through education, training, discipline, or any kind of individual or social influence. It must remain a law unto itself, while the law of its own being must be fundamentally and essentially a complete absence of any law whatever. It is safe to say that if human actions were determined by such a will, there would be no such thing as character or personality which enable us to know our friends and count on their reactions. Social life would become utterly impossible because of the utter chaos of individual behavior. Even a crazy man has a regularity and consistency about his behavior, but a society of free-willers in the sense now under discussion would be Bedlam and Babel thrown into one.

But such an assumption is utter foolishness. The only possible conception, then, of free will which brings it within the range of scientific analysis is a capacity for self-determination, a feeling of freedom or consciousness of choice. Such freedom does not run counter to the assumptions of scientific determinism because it implies only that a portion and sometimes the whole of the determining factors are within the organism itself. This view means merely that the individual or organism responds to stimuli or conducts itself in given situations in ways that harmonize with its own nature. On the human plane this means merely that the individual does or may do as he pleases. The psychologist may set to work, then, to determine why it is that the individual under these circumstances pleased to do the thing which he did. If he were gifted with

greater powers of detailed analysis than are yet possible, he could trace, partly through the influences of hereditary constitution and partly through the effects of experience, those chains of causation which made it inevitable that under the given circumstances the individual should conduct himself in the manner in which he did. From this point of view, Professor McDougall's purposive striving means merely that organisms have within themselves interests and desires which are expressive of their hereditary constitutions as affected by their life conditions and past experiences and which constitute important factors in behavior. Recent psychological theory has made it clear that the individual may or may not be aware of the desires, impulses, or purposes constituting decisive factors in the direction and control of his own conduct. He may even be greatly deceived as to the underlying motives or purposes which he is seeking to realize. But whether the individual is consciously aware of his motives or purposes, or not, the thoroughly informed scientist alone would be capable of unraveling the intricate and delicate chain of cause and effect which has led to his reaction or behavior under given conditions.

These two conceptions of freedom of the will are comparable to two possible conceptions of chance. Pure chance is theoretically an occurrence which is wholly without antecedent conditions. It is something which merely happens. A pure chance world would be a world of complete and perfect chaos. There could be no uniformity or regularity and therefore no scientific laws. There is, however, another conception of chance which means merely that we are ignorant of the detailed operation of a considerable number of minute causes which now combine to produce this result and now that. This second type of chance is, however, subject to mathematical treatment, as in the theory of probabilities which is at the basis of modern statistical methods. One may toss a handful of coins and say that it is a matter of chance as to whether each will turn up a head or a tail. What is meant by this expression is merely that as regards each individual coin there are many minute influences, such as the force with which they are thrown from the hand, the angle at which they leave the hand, the resistance of the air, the obstructions of the surface on which they fall, and similar minute influences which bring it about that some turn up heads and some turn up tails. That such phenomena, however, are not removed from the realm of law is shown by the ease with which the mathematician can determine the relative frequency of various combinations of heads and tails in a thousand tossings of say fifty coins. Now the tossing of the coins is similar not only to the operation of many

factors in individual growth and development, but also to the multiplicity of factors affecting behavior. The problem of the scientist, then, becomes one of determining by statistical methods the relative force of heredity and environment in the shaping of the individual personality and therefore in the determining of particular kinds of behavior.

This point of view implies in the last analysis that every slightest bit of human behavior, or indeed of the behavior of any organism, is a definite result of antecedent and concurrent factors. The scope of determinism is absolute and complete. The individual, however, retains his consciousness of freedom. But this must be interpreted as meaning nothing other than the ability to act in harmony with one's own predispositions and desires; or, as stated above, it means that a large portion and sometimes the whole of the determining influences are contained within the individual himself. Such a view makes possible a study by the methods of science of the factors which result in behavior of particular kinds, and is therefore exactly the assumption which is made by the psychologist. It is also the assumption of the educator, of the moralist, and of all those persons who believe that youthful training, discipline, education, moral instruction, or any other kind of experience, control, authority, or supervision have effects in shaping the character and in determining the present or future behavior of the individual. In spite of a universal popular belief in a naïve spiritistic type of free will, society by and large consistently and uniformly operates on the assumption of the deterministic philosophy.

No one is disposed to question the rightfulness nor the practical utility of the assumption that deterministic relations obtain absolutely throughout the physical world. Experience has shown that on this basis alone it is possible to acquire definite knowledge of the behavior of animate and inanimate things. When such knowledge is once acquired, it has enabled man either to control the so-called forces of nature or so to adapt himself to them as to achieve foreseen ends in harmony with his own interests and desires. Exactly the same logic applies to the psychical and the social sciences. Only on the assumption of a thoroughgoing determinism is knowledge possible. Knowledge can be complete only to the extent that deterministic relations are complete. Moreover, knowledge in these spheres tends to give a similar control over conditions and energies, making it possible for man, as in the physical world, to achieve ends in harmony with his interests and desires. This is obviously the logic of such fields of investigation as psychology with its applications to education in all its aspects, to criminology, to advertising,

and to political, economic, and social relations. On the assumption that certain conditions inevitably produce definite results, it is possible to bring some order out of the apparent chaos not only of primitive magic, myth, and superstition, but even of the operations of crowd psychology which play so large a rôle in economic, political, religious, and other aspects of the social life. To be sure, applied psychology in both its individual and social aspects is in its infancy. But no intelligent student of these subjects can doubt that progress is being made steadily toward a realistic understanding of cause and effect relations and the consequent power to control them for human ends.

Before leaving this aspect of the question it is necessary to dispose of a fallacy of reasoning which is almost universal. It is usually stated that determinism leads to fatalism because it gives man no power over his own destiny. This error pervades nearly the whole of the literature on this subject, and is clearly present in Professor McDougall's reasoning. It is the opposite of the logical conclusion. In a pure chance or indeterminate world freedom is not even thinkable. It is a world in which intelligence would be useless and control of any of the essential conditions of life impossible. It would, indeed, be a world in which individual destiny would be controlled by the Fates. As in the Grecian fable the thread of life might be snipped at any moment, depending on the caprice of one of the utterly indifferent sisters; or as in Mohammedan tradition the life of man would depend on the will of the gods. That is fatalism. And it can not be too strongly emphasized that every philosophy which places the ultimate destiny of man in the hands of some supervising deity or spiritistic entity is in essence fatalistic and logically should leave man spiritless and hopeless. But such philosophies or theologies are the opposite of determinism. The latter assumes a reign of law everywhere. Man through his powers of observation and reason discovers these uniformities in nature, including his own mind and body and the society in which he lives, and thus acquires the power to control them. He thus learns how to lengthen his life and intensify its satisfactions. The reign of causality thus makes it possible for a creature gifted with man's mental capacities to control his life conditions in such ways as to achieve ends which he may himself set up. Such control is the only possible freedom and is removed by an infinity of human satisfactions from the fatalism into which man would be plunged by a genuine indeterminism.

One may indeed apply this reasoning to the very laws of man's own organic life, physical and mental, and observe that only in obe-

dience to law is there a genuine liberty. Through biology, physiology, medicine, dentistry, surgery, dietetics, and a dozen similar sciences man is gradually learning the mechanisms of his own organic life. In consequence he is learning how to be born more comfortably, how to escape diseases, how to preserve his strength, how to multiply his physical enjoyments, and even how to restore his youth. If we may believe Haldane he may in the future pass his embryological stage in a glass bottle and manufacture his foods by synthetic chemical processes in factories. In that day the whole of the weary toil and drudgery of life will have been eliminated by applied science, and if G. B. Shaw and Dr. Wiley are good prophets each of us may look forward to a life measured in terms of centuries. Likewise as regards mental capacities. Both the hereditary and the environmental causes of intellectual behavior will become clear and mental disease and abnormality brought under control. If all this appears a bit fanciful it nevertheless serves to show how the freedom to control his destiny grows out of the application to man of the same rigid determinism we commonly and unhesitatingly apply to physical nature.

Now it will, of course, be said that if in all this process the chain of cause and effect is nowhere broken, then the whole course of events is fully determined and hence man actually has no control over his destiny. All that happens will inevitably happen and man will not in fact really control it. The causal chain even determines the extent of man's reasoning powers, what knowledge he shall acquire, and when he shall acquire it. Also, the application of such knowledge in both time and extent is similarly determined. True enough. But it should be observed at this point that the only tenable conception of freedom makes it equivalent to self-expression and self-realization. Any other conception becomes illogical and self-contradictory. Freedom for an amœba means quite a different type of life from that of the chimpanzee or man. In each case the individual creature finds its fullest freedom in responding to stimuli in ways which are in harmony with its own nature. Only thus can a maximum of life satisfactions be obtained. To this end it is necessary not only that the nature of each organism be a definite and determined result of antecedent conditions, but that its responses or behavior be likewise definite and determined. A definite organic nature at once determines the nature of the reactions to stimuli and also requires such reactions as a means of self-expression and self-realization. In other words, we reach the conclusion, which seems so contradictory to most students of the matter, that strict determinism alone makes possible a genuine freedom, because it alone makes

possible self-expression and self-realization. It is not the least important aspect of this matter that, in view of man's rationality, the realization by him that in the acquisition of knowledge lies the chief hope of his salvation, both individual and social, becomes a powerful factor in his further eager search for the liberating knowledge.

It thus appears that the power to reason saves man from being altogether the idle plaything of cosmic forces. Some one might be disposed to argue and with perfect cogency that the effects of this power are determining in a causal sense by the nature of the power itself. Man is thus compelled by his reason to learn more or less about nature and himself and having learned he is compelled to the extent that he is a reasonable being to follow the findings of his reason. But this alone constitutes real freedom. One would not wish to escape the effects of reason by invoking a chaotic unreason. If he fall into madness he certainly does not escape the clutches of determinism. Since man evolved out of the earth, all his powers are conditioned by, and in harmony with, the material basis for his own most perfect development. In so far as reason reveals the order in this material world and in man's own constitution it enables him to realize his completest personal development and experience. It is thus that the dilemmas of determinism are resolved.

If, for example, a thirsty man is confronted with two glasses of clear liquids indistinguishable in appearance, one of which is water and the other a deadly poison, and he does not know which glass contains water, he possesses no genuine freedom of action in quenching his thirst. It becomes a matter of chance whether he takes up the water or the poison. If he is lucky enough to get the water, his organic cravings are satisfied; if, however, he unluckily selects the poison, he terminates his life. Accurate knowledge of the contents of the glasses is essential to his genuine freedom as a reasonable being. The freedom of the individual thus consists in the last analysis not in any sense of self-determination or consciousness of freedom, but in a capacity to so act or so control his life conditions as to produce ends which he himself sets up. In the example cited the individual might wish to commit suicide and he could only accomplish this end by knowing which glass contained water and which poison.

It is sometimes asserted that the very consciousness of freedom is itself an illusion. Now there is a sense in which this is true and another sense in which it is not true. The common and universal sense of free choice of possible alternatives which constitutes the

usual meaning of the phrase is a fact and as such stands on its own ground as real. The sources of action, the hopes, desires, and motives as well as the striving for their realization are largely contained within the individual and rise in part to a place in his consciousness.

But, if we mean by real or genuine freedom the power to choose between alternatives in the full knowledge of all the consequences to follow in each case, then it must be obvious that such freedom is extremely rare in human experience. The mere consciousness of freedom may prove to be illusory in the light of the subsequent chain of events, for these may prove destructive of the very purposes the individual seeks to realize. Life is thus largely a gamble. One inevitably delivers himself much of the time into the hands of the fates so far as his own powers of controlling his destiny are concerned. But, on the other hand, in those relations where knowledge is large one may make his decisions with a large assurance of what the ultimate outcome will be. His consciousness of freedom not only exists, but will not prove illusory in the sequel. Here he invests in well-seasoned securities instead of speculating on the day-to-day fluctuations of the markets.

This point of view disposes of the objection that the very consciousness of effort is itself a proof of the inadequacy of the determinist view. Thus Professor McDougall (*Outline of Psychology*, 1923, 447–8) in a very much muddled passage rejects the doctrine of universal causation and argues that " human decisions are what they seem to be, real determinants, new beginnings from which new lines of determination run on into the future. . . . The belief in a certain creative power of original determination is a necessity of our moral nature. . . . The belief in ' strict determinism ' on the part of a man who actively pursues his goals and puts forth strenuous efforts is, then, merely a symptom of mental disorder." In answer one may note that determinism, as indicated, never denies that man has a sense of original powers of determination. Many of the factors in behavior are contained within the actor and, being constituted as we are, we are conscious of our powers to do what appears pleasing or best to us under given circumstances. But such consciousness appears to be a mere attribute of the functioning brain, just as life is a characteristic of functioning organic structure, and, therefore, is not in itself a creative agent in the sense of an uncaused and unantedated agent. This does not involve a denial of all "originality " to the human mind. In the infinite variety of biological combinations there are produced some brains of such unique constitution that, when affected by the infinite variety of life circum-

stances, some of them produce reactions that are " original," that is, unique. The works of creative imagination are the products of brains which, under the stimulus of time and place, express themselves in ways which appear marvelously unique and original to the less gifted. But it may here be noted that talent runs in families and therefore has an hereditary basis. Also, its activities are related to the circumstances of time and place. One may also note that society has it within its power ultimately to increase the number of inventors, artists, and scientists by learning more about the inheritance of high general intelligence and special abilities and more about how persons of superior endowments may be enabled to accomplish their utmost. On McDougall's basis we must view every creative act of intelligence as a miracle. On the deterministic basis we can hope some time not only to increase the supply of genius, but to provide it with the best of environmental conditions.

As a final point in the discussion of individual freedom we may observe that the actual freedom which individuals may achieve is a direct correlate of their inborn mental capacity and the knowledge which that and the social milieu have enabled them to acquire. The sage who has penetrated a thousand secrets of nature of which the man on the street is ignorant lives a life infinitely superior in conscious control and adjustment to the essential conditions of organic welfare and psychic happiness. From this point of view, the imbecile is forever completely denied any genuine freedom whatever. The moron would be in a position to achieve a modicum of it, if humane teachers established in his manner of life habits which correspond with the findings of science. From the standpoint of the mere consciousness of self-determination there can be no difference between the moron and the philosopher, but in the actual achievement of individual welfare and happiness, of complete realization of the possibilities of life, the philosopher and the moron are at nearly opposite poles.

When now we apply the foregoing analysis to the social system one is confronted with a most interesting parallelism. There is an almost universal belief in the ability of the social group to determine its own destiny. When resolved into its elements this belief rests on a conciousness of self-determination. So implicit is this that the right of such determination has been made a primary cause of war. In the second place, there is a belief in what Professor McDougall calls " the creative power of original determination," that is, that the social policy is originated within the body politic through the deliberation of " free " intelligences and not in consequence of an inevitable chain of cause and effect. Thirdly, and implied in the

foregoing, is the belief that a social decision once made becomes a genuine cause in itself and will produce results. It is even assumed by the majority favoring any policy that its enactment will accomplish the specific results aimed at. We thus have the community conceiving itself as an entity with conscious powers of decision and therefore capable of determining its own destiny by the exercise of its collective will.

If, now, we apply the conclusions reached in the discussion of individual freedom, we must note that the same principle of causal determination must apply to public as to private decisions. The factors may be more numerous and possibly more difficult to disentangle, but we already know sufficient about them to indicate that they are not wholly mysterious. It is true that decisions once made become factors in subsequent events, but analysis will show that the possibility of social telesis depends on at least three conditions: (1) such complete knowledge of social processes and of all affecting conditions as makes possible a prediction of the outcome of one policy as against another; (2) in a democracy, the possession of this knowledge either by a popular majority or by their leaders; and (3) a similar purposive evaluation of this knowledge—shrewd, cunning men may plot public destruction for private aggrandizement.

In view of these conditions one is made painfully aware that a very large proportion of mankind, because of their low intelligence and their lack of knowledge, remain the unconscious victims of their own ignorance and the social forces about them. Great popular movements, such as we have witnessed in Russia, may be likened to the violent efforts of a blind giant seeking in vain to escape the thraldom of a slavery which his blindness makes inevitable. Only in minor matters of every-day experience do the mass of men as individuals or as groups rise to the level of conscious control. Nor does it seem likely that at any time in the immediate future will the mass of men in their collective capacity possess either the intellectual power or the knowledge to so understand the complex problems of the social system as to give them a genuine warrant for passing judgment upon them. If this reasoning be sound, the greatest fallacy of political theory is the superstitious faith that the voice of the people is the voice of God. The voice of the people must remain the voice of ignorance, of tradition, and of emotional attachment to absolute values and metaphysical entities. There is no ground for supposing that those individuals, and they constitute a large proportion of the total mass of the population, who in their own lives can actually acquire no genuine freedom, are some way or other, when merged in the colorless mass of the democratic

community, qualified to solve the intricate and important problems of collective existence. The final goal of individual evolution is the achievement of a complete freedom to live as long and as happily as his organic constitution, his intellectual level, and his cultivated tastes permit. The final goal of social evolution should be a similar collective telesis in which the social group is able to control to predicted ends the evolution of its own collective life. But such a goal must, with the present constitution of mass intelligence, be postponed to an apparently indefinite distance when all other forms of social Utopias will be realized at once. Moreover, and this is a sorry reflection for the friend of democracy, it begins to appear doubtful whether more than a fraction of the population have the inherent intelligence and character traits to enable them to rise to the level of insight necessary in order to pass sound judgment on the complicated affairs of the social order.

This line of reasoning demonstrates the fatuousness of the naïve optimism of that belief in collective telesis which was promulgated by the late eighteenth-century utopians and continued to our own time by the late Lester F. Ward. It is in fact the present and vivid faith of a large proportion of American sociologists inflicted with the uplift complex. The slow advance of collective man toward the increased control which science gives takes place not because of the blind struggle and mute suffering of the masses, but rather in spite of it. It would be no exaggeration to say that the actual advance of the last two thousand years has been due to much less than one per cent of the individuals who have been born during this period. The rest have lived their little round, played a rôle which represented the natural expression of their natures as formed by the culture about them, and given way to children who have for the most part repeated the rôles. The great events and movements which crowd the pages of history, wars, intrigues, persecutions, crusades, migrations, and political campaigns have in the large been of no more significance for actual human progress, also viewed in the large, than the terrible blood sacrifices of the ancient Mexicans were of significance in the production of rainfall. When one realizes that the actual mass of poverty in our own society is greater than it was a century ago and observes the continuance in popular thought and custom of the behavior which inevitably produces poverty, one may have his sympathies stirred, but not his hopes of an imminent utopia. It thus appears that the progress of science, which is the only source of human advance toward the larger freedom of conscious control, affects the mass of men slowly and tardily. This is apparently due in part to the stultifying effects of ancient tradi-

tion which hangs like a sombre pall over the mental life of the majority of men. It is due in part also to the great differences between men in native intelligence and enterprise, differences which serve so largely to lift the superior individuals to higher levels in the social scale only to leave the mass more inert than they otherwise would be.

But there is still another reason why man in his collective capacity moves forward so slowly, and that is the lack of a developed science of collective life. The social sciences are in their infancy; they remain for the most part the battleground of opinion and theory. In so far as they have achieved positive results their findings are known to a limited circle only. We thus witness the community legislating on a thousand and one things from prohibition to the tariff, without having the faintest notion of the profounder aspects of the questions at issue, and hence producing, as Herbert Spencer said, more unexpected than expected results. When one realizes that the actual achievement of collective freedom in the sense of collective telesis depends on such complete knowledge of causes and effects as will enable the individual citizen to foresee the results of one public policy as compared with another, and also realizes that this complete knowledge in a democratic community must be possessed by the mass of men, he begins to have some appreciation of how long a maze humanity must yet stumble through before it actually approaches a conscious control of its own destiny.

When one approaches the matter from this viewpoint he is rather appalled by the scanty range of positive knowledge of the underlying social factors and processes. We have a considerable number of social philosophers; we have a large number of specialists on different aspects of social life. But on most of the matters genuinely important for the future welfare of the body politic there is lacking that positivity of knowledge which constitutes the authoritative sanction of science. In fact, it is only recently that scientific social research was considered important. Even to-day there is very little of it in the universities because for the most part it is sufficient for the professors to philosophize about old problems concerning which they have acquired a facile phraseology or about the findings of researchers in related fields. We have research professorships in all fields of human interest except the fields dealing with the underlying factors in social life. Outside of the universities various endowments are coming into existence devoted to social research after a manner somewhat comparable to the intensity and thoroughness with which an even greater number of researchers, better paid and better equipped, are trying to discover substitutes for gasoline

or how to make edible compounds out of petroleum jelly. The fact is that the social future is a nearly complete mystery, although there is no ground for doubting that it will flow with an inevitable logic out of the present.

There is thus not only a lack of positive sociological knowledge, but an almost complete lack of any appreciation of the lack. But this is by no means the whole of the difficulty. If we may assume that some bits of knowledge are now available, it is evident that this can become effective in social control only as it is understood and accepted by the mass. Either we must have a more or less democratic scheme of social self-determination or we must have an elaborated technique of manipulating the popular mind by force or cajolery into accepting what the rulers think good for it. The latter is the actual scheme and apparently the only possible one in view of the mental capacity and the general understanding of the average and less than average man. Such manipulation is now a clumsy art practiced according to rules of thumb. It conceivably might become a fine art based on a refined scientific technique. But it will not do to imply that the actual manipulation of public opinion will prove as difficult as the reconciliation of the purposes of the manipulators. Even assuming knowledge to be sufficient to serve as a tolerable guide in a social crisis, the conflicting interests of factions will induce some knowing leaders to deceive and divide the public councils. It is extremely difficult for the well-balanced individual to live the life of reason. But it is next to impossible for a social group to do so, partly because of mass ignorance and partly because some of the leaders prefer public unreason as a means to private gain.

In any case, it must be evident that, viewed in the large, collective man stumbles along more or less blindly, now and then penetrating for a short, dim distance the dense fog which surrounds his pathway. It is also evident that he is making slow progress toward a clearer perception of his future course. That he will ever be able to perceive it clearly for more than very short distances seems extremely doubtful. Like the individual who, even though the all-wise philosopher, can never be certain when an untoward fate may strike him unawares, so society can not be certain what mysterious destiny lurks along its life course. It is obviously not improbable that man, individually and collectively, can never rise to that supreme command of the order in his world which gives genuine freedom. He may thus remain in last analysis a plaything of the fates. But intermediately he has it within his power to alleviate his own destiny by achieving whatever modicum of individual and

collective freedom the completest possible acquisition of knowledge makes possible.

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CONCERNING THE " GOOD MAN " AND THE MORAL STANDARD

ONE of the criticisms made of the utilitarian conception of happiness as the moral standard is that a standard thus constituted would be too ambiguous for any use. Happiness, it is pointed out, is a highly relative matter. The kinds of ends whose realization affords one satisfaction depend on the sort of character one possesses. The thief will derive pleasure from his thieving, the philanthropist from his philanthropy, and so forth. Before we can regard the pleasure-yielding character of an action as throwing any light on the moral status of the action, therefore, we must know something about the dominant interests and habitual traits of the agent. This means, as was first pointed out by Aristotle, that only a good man is a good judge of the good. Or, to state the same idea in the words of a modern ethicist, " The moral sense and the direct appreciations of the good man may thus be said to furnish the standard of right and wrong."[1]

But while this modification of the utilitarian formula overcomes the ambiguity referred to above, it would seem to do so at the cost of another ambiguity no less disconcerting. For, it should be remembered, a truly moral choice must ultimately be a personal one; it is not enough for individuals making such choices to " think of some other person in whose goodness they believe and endeavor to direct and clinch their own judging by imagining how such an one would react in a similar situation."[2] Such a process, no doubt, proves helpful in liberalizing the imagination and suggesting other and finer qualities of appreciation. But, in the last analysis, one must make this broader outlook and these finer appreciations one's own if they are to comprise for him the basis of a genuine moral judgment. To have succeeded in doing this, however, means that one is the sort of a person who finds a socialized outlook and higher ranges of value congenial; which is to say that one is, in a sense, a good man. But, if one is a good man, why should he have moral

[1] Dewey and Tufts, *Ethics*, p. 324.

[2] *Idem.*, p. 324. As the context shows, the writer quoted recognizes the insufficiency of such a procedure, and, although he offers suggestions which point the way to resolving the ambiguity involved in his formulation of the utilitarian standard, these suggestions are not developed by him in any explicit way.

problems so acute and so baffling that he must appeal to the goodness of others to provide him with standards in terms of which to solve them? And, once more, if one's problems are so acute and so baffling that he must look to the goodness of others for inspiration and guidance in adopting that outlook from the point of view of which a correct moral decision is to be made, by means of what standard is he to select the man whose goodness is to serve him thus? And if he is in possession of a standard for making this selection in an adequate manner, why must he look elsewhere than to this standard for moral guidance?

It is easy to see that there is ambiguity here and that it resides in the notion of the good man whose satisfaction or happiness is to furnish the standard by which the agent is to judge the moral quality of proposed actions. How good must a man be for his "moral sense and direct appreciations" to be accepted as furnishing the standards of right and wrong? By what standard is he to be identified? Where is he to be found? Ultimately he must be found in each of us, must he not, if we are to profit by his type of satisfaction or quality of happiness for the control of our judgments? But if so, how can one and the same person be good enough to prescribe the moral ideal and yet so imperfect as to require the conscious use of such an ideal?

It seems to the writer that we have a clue for resolving these ambiguities in the fact of the complex nature of the self. Ideally, the self, let us say, is a dynamic system of interests and capacities so organized that its actions will achieve the greatest possible good (that is, happiness or satisfactory living) for the self and others in the respective situations in which such actions occur. Actually, however, at the problematic moment, there are a number of partial and more or less incompatible selves demanding expression or seeking realization in action. These partial selves or limited sets of interests, being more or less incompatible, are in a given situation incapable of complete integration. Conflict and strife are therefore inevitable. The problem of reflection in such a situation is to arbitrate between the various types of satisfaction represented by the partial selves whose interests are at stake and, if possible, to conceive a form of satisfaction in which the largest number of interests may be realized. The method employed by reflection in attacking this problem is that of forecasting the several series of consequences flowing from the various lines of action under consideration, together with an immediate sensing of the desirability or worth of these consequences in terms of the satisfaction or dissatisfaction aroused by their contemplation.[3]

[3] Dewey and Tufts, *Ethics*, pp. 323–324.

But note the difficulty encountered in such a procedure. All of the consequences forecast may be felt to have positive or negative value in that their contemplation from the point of view of one or the other of the competing selves gives rise to a sense of satisfaction or dissatisfaction as the case might be. In other words, the satisfaction experienced in the contemplation of any end and accepted as indicating the worth of that end is entirely relative to the set of dispositions and tendencies within the self from the point of view by which the matter is regarded.

And here we find ourselves in a position analogous to that of the utilitarian with his indiscriminate appeal to universal happiness, computed in quantitative terms, as the moral standard. As we have seen, the critics of utilitarianism propose to correct the ambiguity in the latter's position by an appeal to the happiness of the good man as furnishing the only reliable standard; and we have seen something of the further ambiguities to which this proposal, as commonly formulated, leads us. How, then, may this appeal to the "moral sense and direct appreciations" of the good man be so formulated as to throw light on the difficulty we have described? The following will indicate the general direction in which, as the writer sees it, a satisfactory answer to this question must be sought.

Let us begin with a somewhat dogmatic definition of the ethical ideal corresponding to the good man. In a word, the good man would be one who habitually seeks his satisfaction in those ends which promise a progressively complete realization of selfhood or personality. But being what he is, man realizes himself most significantly and most completely in social ends. And social ends are such as involve the welfare, not only of the agent, but of all those whose interests are in any way affected; the welfare of others requiring just what one's own welfare demands, namely, the appropriate objects in which to fulfill most significantly and most completely the capacities of their natures.

The above statement is set down in this summary fashion partly for the want of space to defend it, but chiefly because of the clarity and persuasiveness with which it is set forth elsewhere.[4] Taking this conception of the good man for granted, then, and commending it to one confronted with a moral situation for what it is worth, how may the latter make use of it in his appeal to the happiness of the good man as his court of last resort in formulating a moral judgment?

Well, let us bear in mind that in such a situation the agent is conscious of a number of diverse and incompatible points of view

[4] *Cf.* Dewey and Tufts, *Ethics*, chapter 15.

or sets of interest which are competing with one another for control of the main line of action. Among these partial phases of the self, however, there is one which represents the closest approximation to this ideal of the good man. In that particular situation, therefore, this best self, this most generously social point of view, this loftiest outlook, this farthest-reaching perspective is for our agent the " good man " whose satisfaction or dissatisfaction upon contemplating certain consequences as forecast through the imagination constitutes the standard of right or wrong. The greatest good for the greatest number, is, for practical purposes, then, the good as foreseen and appreciated when looking through the eyes and relying on the intuitions of one's best self.

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BOOK REVIEWS

Identité et réalité. ÉMILE MEYERSON. 2d, revised edition. Paris: Alcan. 1912. xix + 542 pp.

De l'explication dans les sciences. ÉMILE MEYERSON. 2 vols. Paris: Payot. 1921. xiv + 338 + 470 pp.

La deduction relativiste. ÉMILE MEYERSON. Paris: Payot. 1925. xvi + 396 pp.

These books by Meyerson are so important to the student of the philosophy of science, and so little known to American readers, that it seems desirable to call attention not only to the latest one, but to the entire set. Meyerson writes in an easy flowing style, too easy, in fact, and too verbose. It takes a certain degree of patience to read him, and in these busy times that is perhaps a reason why he has not been more influential. The average reader will probably find the closing chapter of *Identité et réalité* is a sufficient introduction to the book on Relativity, and he will in these two have the gist of the argument, even if he misses many a valuable detail.

Meyerson proves up to the hilt that science has always been "metaphysical," as that term is understood by the Positivists. In fact, his argument is the most powerful critique of Positivism with which the present reviewer is acquainted. Meyerson's own specialty is the history of chemistry, and he knows his facts. He knows equally his Kepler and Newton. But he knows his facts also in the history of philosophy, Schelling for instance, or Hegel and Hume. His earlier books give perhaps too much an impression of preoccupation with the past, but in his latest work he has produced the

finest philosophical examination of the theory of relativity that the present reviewer has come across. The reviewer has read a number with growing disgust, but this is different. It is, moreover, an examination that is not likely to be impaired in value by the fate of the theory of relativity itself, or the particular outcome of some experiment by Dayton Miller or Michelson. These in brief are the reasons for calling especial attention to the books mentioned above.

The earliest of the series is devoted to the thesis, which is continued through all the rest, that the ideal of scientific explanation has always been identification, equating, finding that things apparently diverse were but exemplifications or transformations of one and the same thing. The extreme of this was the Eleatic complete denial of diversity, which does violence to all apparent fact, and indeed explains nothing, because the details to be explained disappear. Yet towards this euthanasia all explanation, from that day to this, has turned and returned, again and again, like the moth to the candle flame.

The Positivist has endeavored to eliminate from science the metaphysical factor, as found in the concepts of substance and cause. He would have us substitute therefor the concepts of mathematical function and phenomenalistic law. M. Meyerson piles up tirelessly and inexhaustibly case after case of evidence to prove that the attempt has been sterile as method, and contrary to the whole spirit and genius of science. The scientist is and remains the metaphysician. The scientist wishes not merely to describe, but to explain. One substance, taking protean forms, and causing natural phenomena, is the real delight of his heart. Positivists are philosophers who try to tell the scientist what scientists ought to believe. But they succeed in doing little more than troubling the scientist's composure. They bluff him into saying in words that, of course, he is seeking laws not causes. They make him repeat after them that Hume has, of course, overthrown all the old nonsense about substances and efficient causes. But in his secret heart he believes it not. In his theorizing he repudiates it. The more philosophically-minded a scientist is, therefore, the more he is torn within himself, and the more restlessly does he jump from one philosophy to another, from realism to phenomenalism, and pragmatism, and even idealism, and then back to realism again—ever back to realism. If a philosopher is lucky, he may get hold of one philosophy that seems to him good. But no scientist is quite equipped without a suite of three or four philosophies. When he finds things getting hot for him in one philosophy, he slips over into another. He may even brag about this inconsistency, and call it being common-sense and unmetaphysical.

M. Meyerson finds in the history of atomism these points beautifully illustrated. Even more striking are the conservation theories. The endeavor to find a continuant, an invariant, is not a mere mathematical device. What the scientist would like to find would be a substance, in the good old sense of the word: something that both endures and also brings identity into apparently diverse things; something that reduces qualitative differences to quantity and space arrangement differences. The thought of such a substance is intrinsically satisfying, and theories of this sort intrinsically plausible.

A specific illustration might be mentioned. It is an argument that many a good scientist may be found urging. They say that the law of the conservation of energy prevents mind from influencing physical events. It ought to be obvious, on the contrary, that a law which states that something remains constant during change does not tell when or where change is to occur. The law of conservation of energy predetermines whatever can be deduced from it, and no more. It is not a power that produces change, but a structural limitation which holds change within bounds. Such a limitation is analogous to a waterpipe which limits the flow of water, but does not make the water run. Why, then, this persistent conviction that the conservation of energy prevents mind's action on the course of events? The reason is the metaphysical hypostatizing tendency. Stubbornly this tendency is bent on transforming the law of energy into a substance, a thing called "Energy," a "stuff that does things." "You can not do things without expenditure of some of the stuff that does things," says the metaphysical scientist, much as if he were saying you can not make purchases without cash. "And furthermore, you can not make energy do things it is not already disposed to do," for that would call for a super-energy back of it. And so "nature rolls on her relentless way," and mind is proved helpless, and science has become substance-metaphysics. Whatever complex combination of energy and momentum it may be, which is conserved in the relativity theories of the future, the tendency to turn this into a substance will probably still survive.

The converse of this is the irritation aroused by the second law of thermodynamics, or with that aspect of it which implies that the world is running down. This means irreversibility, non-identity of past and future states, and even when partly explained in terms of statistical probability, implies all the more a highly improbable initial state. Few are so frank as the biologist Haeckel, who says, in effect, "This law contradicts philosophy, therefore the law must be rejected." But the distaste is common to many scientists, and illustrates the bias of the scientific mind which finds identity and equa-

tions plausible, and diversity and inequality unsatisfactory, or as M. Meyerson would say, "irrational."

In *De l'explication* M. Meyerson reviews the phlogiston theory in eighteenth-century chemistry. Here, again, we find the identity-motive actuating the protagonists, and it may be added also, the power of mental inertia even among the most progressive. But he draws his illustrations from other times as well. Such a concept as that of "potential energy" reveals in our own day this identity-motive, or determination to find substantial identity even where it is unverifiable. Yet verification is supposed to be the cornerstone of modern science! Again he maintains, with considerable show of evidence, that the mathematical and quantitative aspects of modern science, and the correlative tendency to ignore qualitative differences, are all of them due less to a respect for the precision of mathematics than to a soul-satisfying escape away from the "irrationality" of qualitative diversity.

In the riches of M. Meyerson's leisurely exposition there is many a bypath. One of these deserves especial mention, for it leads to some interesting comparisons in his latest book, and will of itself be of interest to philosophers. In the early part of the second volume of *De l'explication* there is an examination of Hegel; as powerful a piece of philosophical criticism as one is likely to encounter in many a day. With merciless logic it is established, first, that Hegel's "philosophy of nature," so far from being a side-issue, is necessarily the keystone with which Hegel's whole system stands or falls. Secondly, that judged from the standpoint of our present natural science, Hegel's philosophy of nature is one of the most complete and humiliating failures in all the history of human thought.

M. Meyerson's new book on Relativity concerns itself with contemporary science. But the thesis is that these same tendencies which he has previously traced through the history of atomism or conservation doctrines, the same that shaped the debates in the peculiar interlude of the phlogiston controversy, are still to-day at their old work, in these new theories of relativity and quanta. Unlike most books on the Einstein theory, M. Meyerson's makes no attempt at a direct exposition of what the theory is. He takes that for granted. He is concerned with the philosophical foundations, and he leaves little doubt in the mind of the reader, either of his scientific competence, or of his knowledge of the literature in French, German, and English. He establishes both by quotations of opinions and by examination of the actual use of the relativity theory, that the upholders of the relativity theory do not intend it to be taken as a mere descriptive device, or bit of abstract mathematics. He

quotes their casual statements to the contrary of his conclusion, and refutes these statements out of their own further statements and their own practice. Meyerson maintains that neither the Positivists inspired by Comte or by Mach, nor the Kantians such as Cassirer, nor the pluralist idealists who find in Einstein relativity a proof that all is relative to the observer—none of these has an interpretation which accords with the facts of the relativity development. The relativity theory is a new deanthropomorphizing of science, moving further than ever from the basis of common-sense spatial intuition, and away from explanation in terms of the familiar or the intuitively self-evident. And the theory intends to be true, or at least, as M. Meyerson puts it, "truer" than any previous theory, and not merely convenient.

M. Meyerson makes use of an excellent comparison between the old law of inertia and the new generalized relativity. For Aristotle, rest was natural, and a continued motion of a body in a straight line would call for an explanation. But for Galileo the motion of a body in a straight line needed no explanation, save that it was the nature of space to allow a body thus to continue to move. So likewise for Newton, the pulling of a planet into an elliptical orbit from this natural straight-line motion was something that still needed an explanation. There must be some force at work, pulling the body towards the focus. Now in turn for generalized relativity the orbit itself needs no such explanation. The body is following its natural path in the wrinkled four-dimensional space-time world. The path is as natural as straight-line motion in the older physics. Gravitation as a pulling force has disappeared, and so, in a sense, has matter. What we have left is space, a peculiar crooked space, with time as a fourth dimension. The qualitative difference between space and time is ignored. Space itself has become a sort of world-substance. Descartes wished to reduce matter to mere spatiality. The relativists have done it.

But there is a paradox in this reduction. Certain of the relativists wonder whither the physical world has vanished away, particularly if electrical phenomena are to follow gravitation and matter, and reduce to twists of space. And this space is not the space of intuition, but a space of mathematical equations. They have sought the real. They have found mathematical equations, which seem man-made things. When we think of something as objectively real, we think of it as surprising, problematic, rich in not yet revealed potentialities. But when we develop a deductive system to the full, then everything falls into place, and there are no more mysteries. We love such systems indeed, but then we ask ourselves whether this systematic finality can be the same as that rich and potentially infi-

nite reality that is the objective world, and we answer no. When all is reduced to space, especially this queer, unimaginable, unhomogeneous space of Einstein, and all we know of space is the mathematics of it, we suddenly stop short and ask whether the reality has not evaded us, and left us with nothing but its apparent form and outward shell. Perhaps it is not even the shell, but only a mental construction of ours. The very success of the reduction thus shakes our faith in it, and the last word of explanation becomes agnosticism. Hamlet seems to us the more real because the springs of his action are not perfectly comprehensible to us. That it be a bit opaque to our understanding is to be expected of the real. And so conversely of the physical reality, we find Eddington and Weyl wondering whether the very success of their generalized theory does not indicate in it a lack of objectivity. We might suppose a similar lingering doubt in the mind of old Parmenides.

For this reason scientific explanations seem at times to explain away. Add to this such other characteristics of scientific theories as that they are constructions justified by many bits of evidence, no one of which is conclusive, and that one theory is sure to be soon superseded by another, and the result is still more to encourage agnosticism. The scientist is often quite dogmatic and assured—but it is in his denials. Aristotle and Descartes and W. J. Bryan were wrong, of that he is sure. But in that which he affirms, the scientist is skeptical and cautious. His latest theory is indeed, he admits, guess work, the best guess under the circumstances. This is an attitude that annoys the non-scientific mind. How can a scientist be so sure that one theory is false, when he confesses he does not know what is the truth?

The scientist has, nevertheless, a positive, dogmatic tendency in his makeup. Show him that an experimental law is only approximate or even mistaken, and he will accede to the inevitable. But an explanatory substance theory, the ether, the Bohr theory of the atom, he will cling to when the evidence is piling up against it, and twist and strain it to meet the objections. About this he will be very stubborn. The most bitter of scientific quarrels have been about such topics. Neither internal contradictions, nor lack of consonance with fact will cause an explanatory hypothesis to be abandoned—until another like it has come to take its place. The battle for the overthrow of such a theory may be terrific, and only a new theory of the same explanatory substance type can hope to win it. But now, while the scientist will cling to the new theory in its turn till its successor appears plainly in view, and will not hear of returning to the older views, he will also be still dissatisfied. For though he postulates, by a sort of fiat of will, that the real is ex-

plainable and deducible, he has within him a feeling and sense for reality, which all the while demands a reality that breaks over and escapes the thin network of all his explanations. This peculiar synthesis of dogmatic firmness and skeptical caution is, as we have said, characteristic of the scientific attitude, and perplexing to those not scientifically trained.

Why are substance theories the most explanatory? It has been very often claimed that substances explain nothing, and are the very antithesis of mathematical function relationships, which are rich in deductions. But this does not seem to be true, if we can judge from concrete cases, such as the contemporary theory of matter as atomic in structure. Such a theory does seem to have a richer variety of consequences, mathematically deducible, than any mere functional law could have. Perhaps in such a case we are helped in deduction by the picture we can form in imagination. Positivism, that eliminates such models, from Comte down to Mach, and Whitehead, and Russell, has had few discoveries to its credit. But the variety of consequences seems not merely to be more imaginable, but to be objectively greater in number in an atomic theory. We can not get very far with, for instance, the laws of thermodynamics, without some sort of structure and situation in which to apply them. The scientist has become a substance metaphysician, as the common-sense man has, not through conscious intention, but by a sort of natural selection. That sort of science has been fertile and has survived. In face of M. Meyerson's accumulated evidence of the course science has actually taken with such evident success, the burden of proof that science ought to take some other course, as, for example, that it should introduce no entities not directly verifiable by the senses, is a burden that rests on the proponent of such an alternative.

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Bridges, James Winfred: An Outline of Abnormal Psychology. Third Edition, revised. Columbus: R. G. Adams & Co. 1925. 236 pp. (The section on explanation in Chapter I has been revised, important additions have been made to the chapter on Instinct and Emotion, and the chapters on Intelligence and Personality have been almost entirely rewritten.)

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NOTES AND NEWS

The 1925 Meeting of the American Psychological Association will be held from Monday to Wednesday, December 28, 29 and 30, at Cornell University, Ithaca, New York. So far as possible papers of general and theoretical import will be placed in the session of Monday, December 28. The business meeting will be held on Monday evening. In place of an afternoon session devoted to a Symposium, the Program Committe hopes to schedule a sufficient number of Round Table conferences to occupy Tuesday afternoon. The annual dinner of the Association, followed by the Presidential Address and smoker, will be on Tuesday evening. Wednesday, December 30, will be devoted to sessions of the Section of Clinical Psychology.